

1. The first part of the report, which is the most important, is the one that deals with the results of the study. This part is divided into two main sections: the first section deals with the results of the study, and the second section deals with the conclusions of the study.

1. Hayaki MATSUI, Tokyo, Japan.
2. Norio DANBARA, Tokyo, Japan.

1. *Phragmites australis* (Cav.) Trin. ex Steud.
 2. *Scirpus americanus* (L.) Pers.
 3. *Eleocharis acicularis* (L.) Rostk Schmidt
 4. *Sagittaria arifolia* (L.) Link.
 5. *Alisma plantago-foliosa* (L.) Rostk Schmidt
 6. *Sparganium angustifolium* Michx.
 7. *Najas* sp.
 8. *Chara* sp.
 9. *Utricularia* sp.
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SCREEN DISPLAY CONTROL AND TRANSITION METHOD AND ITS SYSTEM

Hayaki MATSUI
Norio DANBARA

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SCREEN DISPLAY CONTROL AND TRANSITION METHOD
AND ITS SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a method for realizing screen transitions on the WWW (World Wide Web) browser on the screen of an automatic teller machine (hereafter referred to as a Web-compatible ATM), which incorporates a WWW browser to make use of the Internet.

Of late the spread of the Internet is remarkable indeed, and progress has been made in the use of the Internet by ATMs (Automated Teller Machines) and the terminals of information supply service.

It is possible to easily create a home page using HTML (HyperText Markup Language) to transmit information over the Internet.

If a WWW browser is loaded in the ATM, information available over the Internet can be displayed on the ATM screen. Moreover, financial institutions are expected to become capable of providing new service by use of the Internet, and adding and changing the screen images of the ATM by adopting HTML.

A file written in HTML (a HTML file) has a layout of objects (keys and specific areas of text) and describes the processes to be executed when events (a key being pressed, the occurrence of time-out, etc.) related to the objects occur.

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SUMMARY OF THE INVENTION

An object of the present invention is to divide HTML information into an HTML file describing an image content and an HTML file describing a screen transition process to thereby increase the independence and reusability of images.

Another object of the present invention is to adopt a table form to create an HTML file describing a screen transition process to thereby eliminate an omission of description of transition destinations corresponding to events.

To achieve the above objects, according to an aspect of the present invention, there is provided a screen display control method in an information processing unit sequentially changing over a series of image contents to display images on the screen, wherein image content information and screen transition process information, said screen transition process information being used to perform the screen transition process, are separate and generated separately, and wherein the frame layout of an image is composed of a parent frame and two child frames in the parent frame and the above-mentioned image content information is stored in one child frame and the above-mentioned screen transition process information is stored in the other child frame.

In a second aspect of the present invention, there is provided a method for generating a screen transition program to carry out the screen transition

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process in an information processing unit sequentially
shifting a series of image contents to display images on
the screen. This method comprises storing a sheet
describing the processing items in the screen transition
5 process in a table form and an screen transition program
generator in a file, wherein the screen transition
program generator sequentially reads the processing
items from the sheet, sequentially writes in the file a
necessary program descriptions corresponding to the read
10 processing items, and generates an screen transition
program on the file.

In a third aspect of the present invention,
there is provided a method for generating an screen
transition program to carry out the screen transition
15 process in the information processing unit sequentially
changing a series of image contents to display images on
the screen. This method comprises storing content-parts
in the screen transition process and a manager sheet
describing in table form events that occur in the
20 content part as processing items, and a controller sheet
describing the processing items in the content part in
table form and an screen transition program generator in
a file, wherein the screen transition program generator
sequentially reads the processing items described in the
25 manager sheet, sequentially writes, in the file,
necessary program descriptions corresponding to the read
processing items, generates a manager, and sequentially
reads the processing items described in the controller

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Fig. 1 is a diagram schematically showing an example of system configuration of a Web-compatible ATM to which the present invention is applied;

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Fig. 8 is a diagram showing an example of an screen transition program generated based on the manager

Fig. 9 is a diagram showing an example of an screen transition program generated based on the controller sheet;

Fig. 10B is a flowchart following the flowchart in Fig. 11A;

Fig. 11B is a flowchart following the flowchart in Fig. 11A;

The preferred embodiment of the present invention will be described with reference to the accompanying drawings.

In a bank 101, Web-compatible ATMs 102a to 102n are connected through LAN 103 to a WWW server 104.

25 The Web-compatible ATMs 102a to 102n, by using
information (HTML file, for example) downloaded from the
WWW server 104, show information on the screen, handle
transactions and provide various kinds of services to

customers.

The Web-compatible ATMs 102a to 102n make use of services by WWW servers 108a to 108n under affiliation with the bank 101 through the proxy server 106 and the circuits of the Internet 107 and so on.

The WWW servers 104, 108a to 108n are connected to hard drives 105 and 109, which contain the image contents (HTML file) 110 and the screen transition program (HTML file) 111.

10 The screen transition program 111 is generated by an screen transition program generator 112, which characterizes the present invention.

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15 This screen transition program generator 112 generates an screen transition program (HTML file) based on a manager sheet/controller sheet 113 in table form stored in the hard drive 114. The manager sheet/controller sheet 113 will be described later on. In this embodiment, the manager sheet/controller sheet 113 is stored in the hard drive 114, but may be stored in
20 the hard drive 109.

In this embodiment, the ATMs 102a to 102n are designated as Web-compatible ones and the organization 101 as a bank. However, the ATMs are in a trend toward diversification in service and differentiation in
25 function, so that the equipment to which the present invention is applied may cover items of equipment which are designated as other than ATM and the installation site may be other sectors other than banking facilities.

5 With a Web-compatible ATM, the screen appears
as indicated at 201. With regard to its hierarchical
structure, there is one parent frame 202 and at a lower
level, there are a child frame 203 that contains screen
transition process information and another child frame
0 204 that contains image content information.

Fig. 3A to 3F show the screen transitions in banking transactions provided by Web-compatible ATMs 102a to 102n.

The screen shows the transaction selection image 301, in which there are the message display area 20 302 and transaction selection keys 303 (Fig. 3A).

The card insertion-waiting image 311 has an illustration 312 that asks the customer to insert a card, a delete key 313, and a message display area 314.

When a card is inserted, the identification input image 321 appears (Fig. 3C).

5 At the end of transmission or reception to or
from the host, the balance display image 341 is shown on
the host-related transmission-reception image 331 (Fig.
3E).

When the Confirm key 342 is depressed, the card reception-waiting image 351 appears (Fig. 3F). While the card reception-waiting image 351 is being shown, when the customer receives the medium such as a card, the transaction selection image 301 appears again (Fig. 3A).

Fig. 4 shows the call relations by which to realize the image contents and the screen transitions that appear on the Web-compatible ATMs 102a to 102n.

25 The controller 402a to 402n decides the next
image from the image currently displayed and from an
event that occurs in that image and causes an image
switchover.

Note that the image content 404a1 to 404nm can
5 be generated by using an ordinary home page generating
tool.

10 For example, in the amount input content part,
the amount input image is displayed and the user inputs
an amount of money.

Generally, one content part consists of a plurality of images.

Fig. 5 shows how HTML files are loaded to realize the frame layout shown in Figs. 2A and 2B.

The Manager frame is currently set to size 0.

Fig. 6 shows a manager sheet 601, in other words, an screen transition table that tabulates the

The column 704 lists the events, such as waiting for card insertion, which occur in each image.

The squares 705 show the row numbers as transition destinations, which indicate what content part is the next destination when an event occurred in the content part.

5 If a square 605 is blank, this means that if the specified events have occurred in the content part, this transaction (waiting for card insertion in the case of Fig. 7) is terminated at this point.

10 Note that generally there are a plurality of controller sheets with respect to one manager sheet.

Fig. 7 shows only one content part titled Waiting for card insertion.

15 Fig. 8 is an screen transition program 901 generated from the manager sheet 601, simply referred to as a manager.

Fig. 9 is an screen transition program 1001 generated from the controller sheet 701, simply referred to as a controller.

20 Because generally there are a number of controller sheets, there are controllers, namely, screen transition programs as many as the controller sheets.

Fig. 9 shows only the CardSounyuu.asp portion of the screen transition program.

25 Fig. 10A is a flowchart showing the steps for generating an screen transition program 901, in other words, a manager from a manager sheet 601.

At Step 1101, a transaction name is obtained from a manager sheet 601.

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At Step 1104, variable Y is set as Y=1.

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At Step 1112, If (Code="Fault") then,
Shougai "Start", ", the transaction name obtained at
Step 1101, ", End if, Select Case ManagerID are written
as a character string in the file.

At Step 1114, Select Case ContentsParts is
5 written as a character string in the file.

At Step 1116, the content part name at the first line of the manager sheet 601 is obtained and its English name is obtained by referring to the dictionary sheet 801.

At Step 1118, the variable Y is set as Y=1.

At Step 1120, Case ", the content part name
20 obtained at Step 1119 written as a character string in
the file.

At Step 1122, the variable X is set as X=1.

At Step 1124, the transition destination, the line Y and the column X, in the manager sheet 601 is

At Step 1125, if the transition destination obtained at Step 1124 is blank, the following processes from Step 1126 to 1128 are skipped.

At Step 1127, the content part name at that line number of the transition destination in the manager sheet 601 which was obtained at Step 1124 is obtained, and its English name is obtained by referring to the dictionary sheet 801.

At Step 1129, the variable X is incremented by 1, i.e. $X=X+1$.

At Step 1131, End Select is written as a
25 character string in the file.

At Step 1133, the variable Y is compared with

the number of lines of the manager sheet 601, and if the variable Y is smaller or equal to the number of lines, the processes from Step 1119 to Step 1120 are repeated.

At Step 1134, End Select is written as a
5 character string in the file.

At Step 1135, End Select is written as a character string in the file.

At Step 1136, End Sub, </SCRIPT>, </html> are written as a character string in the file.

10 At Step 1137, the file is closed.

Figs. 11A and 11B are flowcharts showing the steps for generating the screen transition program 1001, in other words, the controller 1001 from the controller sheet 701.

15 At Step 1201, a content part name is obtained from the controller sheet 701, and its English name is obtained by referring to the dictionary sheet 801.

At Step 1202, a file with the English content part name, obtained at Step 1201 and added with .asp is
20 opened.

At Step 1203, Sub, the English content part name obtained at Step 1201, (Gamen Code) are written as a character string in the file.

At Step 1204, Select Case Gamen is written as
25 a character string in the file.

At Step 1205, Case "Start", Session ("YobidashiManager")=Code are written as a character string in the file.

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At Step 1207, top.View.location= "", the English image name obtained at Step 1206, ".html" are written as a character string in the file.

At Step 1209, an image name at the line Y of the controller sheet 701 is obtained.

At Step 1211, Select Case Code is written as a character string in the file.

At Step 1213, an event name at the column X of the controller sheet 701 is obtained.

At Step 1215, if the transition destination obtained at Step 1214 is blank, the following processes from Step 1126 to 1128 are skipped.

At Step 1217, the content part name at the transition destination obtained at Step 1214 in the

At Step 1218, top.View.location= "", the English image name obtained at Step 1217, html" is written as a character string in the file.

At Step 1220, the variable X is compared with the number of columns of the controller sheet 17, and if the variable X is smaller than or equal to the number of columns, the processes from Step 1213 to 1219 are repeated.

At Step 1222, the variable Y is incremented by 1, i.e., $Y=Y+1$.

At Step 1224, Case Else, top.Manager.Manager
25 Session("YobidashiManager"), ", the content part name
obtained at Step 1201, , ", Code, End Select are written
as a character string in the file.

At Step 1225, End Sub is written as a

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Further, it becomes possible to easily control the screen transitions according to an screen transition table.

It is easy to divide work between ATM image generation and screen transition table generation.

The scope of application of the present invention is effective not only to Web-compatible ATMs but also to other business systems and various kinds of information terminals.